

**DESAIN DIDAKTIS MATERI PERBANDINGAN PADA MATEMATIKA
SEKOLAH UNTUK MAHASISWA CALON GURU**

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ABSTRAK

Rani Sugiarni (2024). Desain Didaktis Materi Perbandingan pada Matematika Sekolah Untuk Mahasiswa Calon Guru

Pemahaman yang baik terhadap pengetahuan matematika sekolah khususnya materi perbandingan *urgent* dimiliki oleh mahasiswa calon guru matematika. Hal ini penting mengingat dalam mendukung tugas profesionalnya sebagai pendidik. Namun, ternyata, masih ditemukan mahasiswa yang mengalami *learning obstacle* pada saat mempelajarinya. Oleh karena itu, penelitian ini bertujuan menghasilkan desain didaktis rekomendasi materi perbandingan pada matematika sekolah yang didahului dengan melakukan analisis *scholarly knowledge* dan organisasi *praxeology* oleh peneliti dalam mendukung meminimalisasi *learning obstacle* mahasiswa. Metode penelitian yang digunakan yaitu penelitian kualitatif dengan pendekatan fenomenologi hermeneutik. Analisis data dilakukan sesuai dengan tiga tahapan dalam *Didactical Design Research* (DDR), yaitu prospektif, metapedadidaktik, dan retrospektif. Partisipan dalam mengidentifikasi *learning obstacle* sebanyak 25 orang mahasiswa yang telah lulus perkuliahan Kapita Selekt Matematika SMP; sedangkan partisipan dalam implementasi desain hipotesis sebanyak 20 partisipan yang sedang mengikuti perkuliahan Kapita Selekt Matematika SMP pada salah satu Program Studi Pendidikan Matematika Swasta di Jawa Barat. Peneliti sebagai instrumen utama pada penelitian ini juga menggunakan beberapa instrumen pendukung diantaranya tes diagnostik, pedoman wawancara, dan lembar observasi. Hasil penelitian ini menunjukkan bahwa: (1) Karakteristik *learning obstacle* mahasiswa calon guru yaitu *didactical obstacle* pada susunan materi perbandingan, *ontogenic obstacle* pada teknis dasar aritmetika, dan *epistemological obstacle* pada pengetahuan konsep rasio dan proporsi; (2) Susunan *hypothetical learning trajectory* materi perbandingan, (3) Desain didaktis hipotetik pembelajaran perbandingan berdasarkan *Theory of Didactical Situation* (TDS) dengan empat situasi yaitu aksi, formulasi, validasi dan institusionalisasi; (4) hasil implementasi desain didaktis hipotesis materi perbandingan menunjukkan prediksi respons mahasiswa sebagaimana tercantum pada rancangan antisipasi didaktis pedagogis yang sudah dirancang sebelumnya, (5) Analisis hasil penelitian menghasilkan desain didaktis rekomendasi materi perbandingan. Secara keseluruhan, penelitian ini menegaskan pentingnya desain didaktis materi perbandingan pada matematika sekolah yang menunjang pengembangan kompetensi profesional calon guru. Sehingga mahasiswa calon guru lebih siap mengajarkan topik perbandingan dengan efektif. Identifikasi karakteristik *learning obstacles* materi perbandingan setelah implementasi desain didaktis menjadi salah satu tindak lanjut yang direkomendasikan penelitian ini.

Kata kunci: Desain Didaktis, Matematika Sekolah, *Learning Obstacle*, Materi Perbandingan

ABSTRACT

Rani Sugiarni (2024). Didactic Design of Ratio Topics in School Mathematics for Pre-Service Teachers.

A good understanding of school mathematics knowledge, particularly ratio topics, is urgent for pre-service mathematics teachers. This is important considering that in supporting their professional duties as educators. However, many pre-service mathematics teachers still face learning obstacles when studying this material. This study aims to develop a didactic design for teaching ratio topics in school mathematics by analyzing scholarly knowledge and praxeological organization to help minimize these learning obstacles. The research employed a qualitative method with a hermeneutic phenomenology approach. Data analysis adhered to the three stages of Didactical Design Research (DDR): prospective, metapedadidactic, and retrospective stage. The research identified learning obstacles among 25 participants who had completed proportion topics in Junior High School Mathematics course, while 20 participants who were currently enrolled in the course took part in the implementation of the hypothetical design. The findings of this study indicate: (1) The characteristics of learning obstacles for pre-service teachers are didactical obstacles in the arrangement of ratio materials, ontogenic obstacles in basic technical arithmetic, and epistemological obstacles in knowledge of the concepts of ratio and proportion; (2) The development of a hypothetical learning trajectory for ratio topics; (3) The design of a hypothetical didactic model for teaching ratio topics based on the Theory of Didactical Situations (TDS) encompassing four situations: action, formulation, validation, and institutionalization; (4) The implementation results of the hypothetical didactic design indicated student responses aligned with the previously designed didactic pedagogical anticipation framework; (5) The analysis of the research results produced a recommended didactic design for teaching ratio topics. Overall, this study underscores the importance of a didactic design for ratio topics in school mathematics to support the development of professional competencies in pre-service teachers, thereby preparing them to teach this topic more effectively. Identifying the characteristics of learning obstacles after the implementation of didactic design is one of the recommended follow-ups of this study.

Keywords: Didactic Design, School Mathematics, Learning Obstacles, Ratio Topics

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